NDIA Expeditionary Warfare Conference

In-Stride USV Force Multipliers

Mr. Howard Hornsby
NAVTEC, Inc.

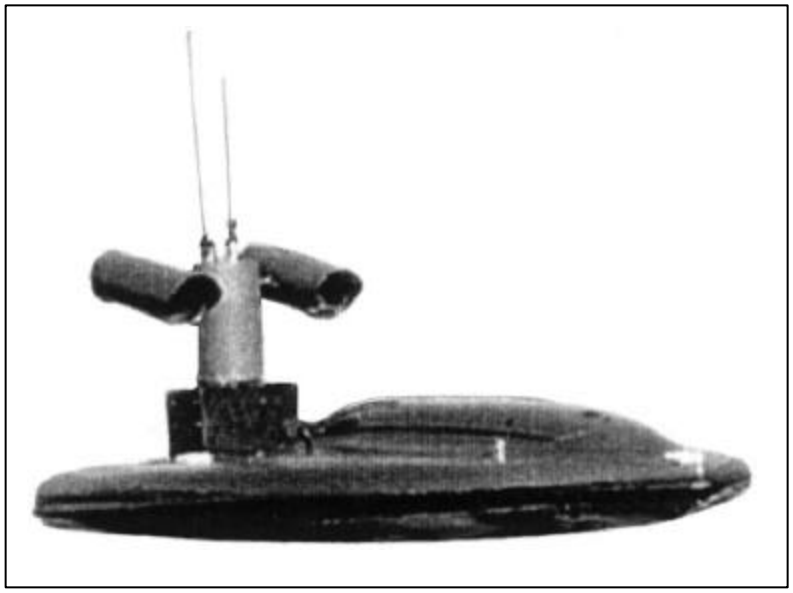
October 24, 2000

NAVTEC, INC.
Robotic Systems

In-Stride USV Force Multipliers

NAVTEC, INC.
Robotic Systems

OWL Mark II Specifications



- **Speed:** 0-45 kts
- **Endurance:** 7.5 Hrs+ at max speed
- **Video/Telemetry:** 12+ nmi - line of sight
- **Max Payload:** 750 lbs.
- **Fuel Capacity:** 35 gal.

- **Vehicle Weight:** 1100 lb. (Dry)
- **Payload Weight:** 450 lb.
- **Propulsion System:** 700 cc Yamaha 2-cycle gas engine, diesel option
- **Length:** 9.7 ft.
- **Width:** 5.4 ft.
- **Draft:** 6 inches

NAVTEC, INC.
Robotic Systems

OWL Command & Control

Rack Mount Control Console in Weather Proof Transit Case

USV pier Command and Control at MIUW site, Bahrain

Suit Case Control Console

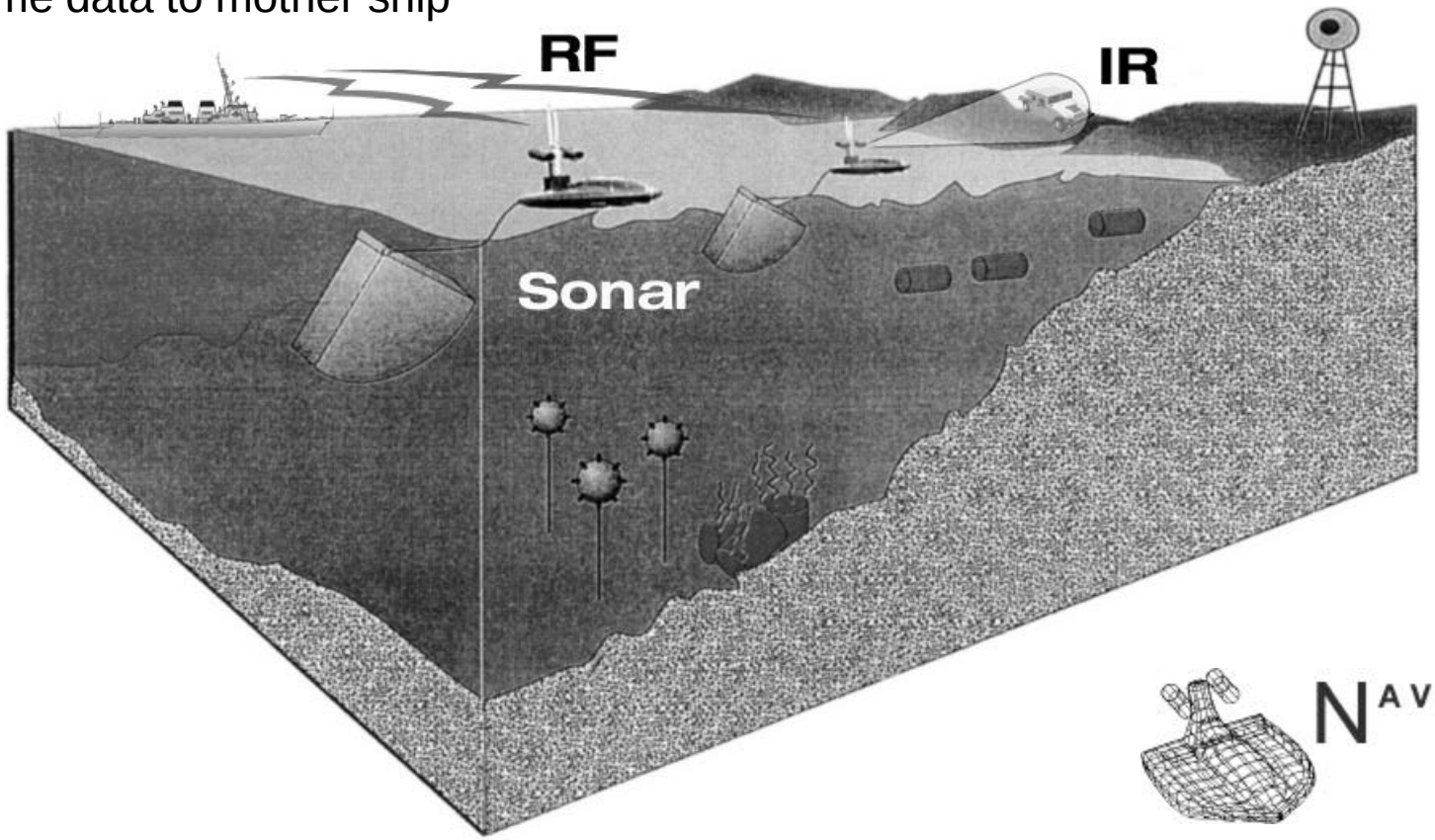
NAVTEC, INC.
Robotic Systems

Proposed USV Missions

NAVTEC, INC.
Robotic Systems

USV CONOPS Example
Multi-Mission

- Two USVs position off coast and conduct MCM, hydrographic survey, and optical search
- Optical surveillance off coast & METOC data collection
- Detect and ID enemy on beach
- Side-scan or multibeam sonars detect presence of mine-like objects
- Real time data to mother ship



NAVTEC, INC.

Deployment Platforms

USS Nicholas
(FFG-47)

Typhoon
(Cyclone Class Patrol Craft)

Pegasus
(Mark V SOC)

USS Ardent
(MSO)

USNS Catawba
(ATF 166 Class Fleet Ocean Tug)

Mark V USV Recovery

Brittany
(60 ft workboat)

R/V Cory Chouest
(Research Vessel)

100x50 ft Barge

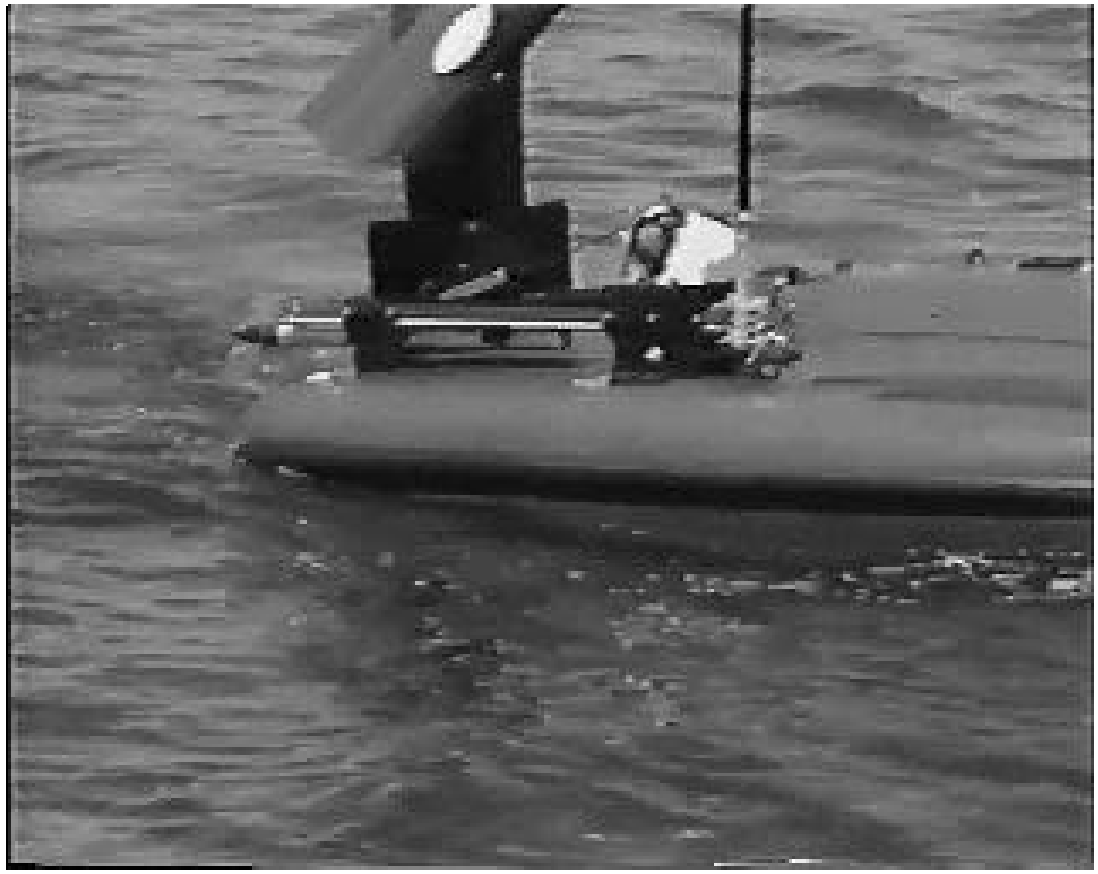
NAVTEC, INC.
Robotic Systems

Sensor Options

- Surface
  - Visual, IR, Starlite
  - Acoustic
- Subsurface
  - Side scan sonar
  - Multibeam/bathymetric sonar
  - Optical
  - Magnetometer/gradiometer
  - Acoustic
- Environmental
  - SVP, water prop, bathymetry, sea state, turbidity

NAVTEC, INC.
Robotic Systems

Sensor Options



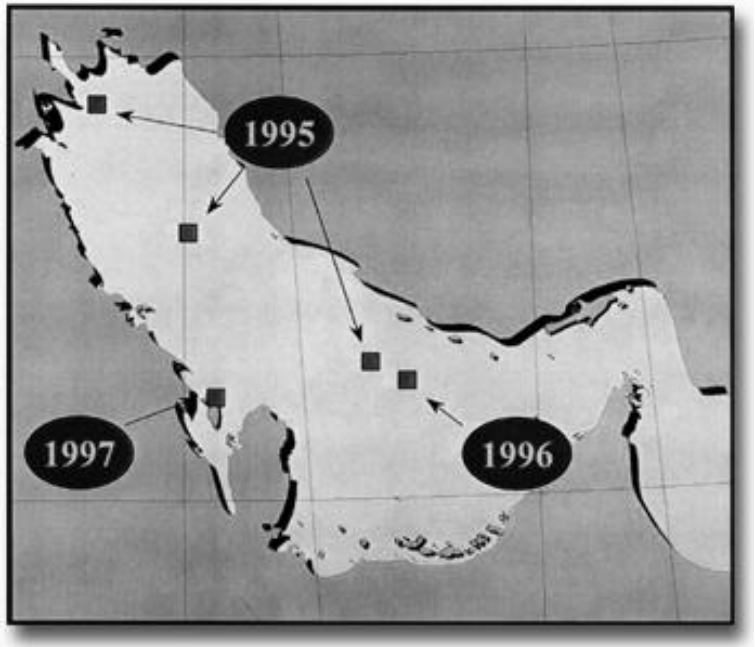
NAVTEC, INC.
Robotic Systems

Sensor Options (cont.)

NAVTEC, INC.
Robotic Systems

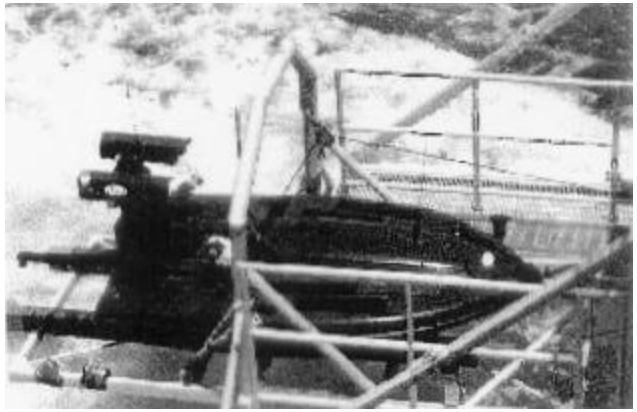
Persian Gulf Deployment

- Mine warfare operations
- Littoral ASW surveillance
- MIUW USV waterside security missions
- Special operations
- Maritime Interdiction Operations (MIO)



NAVTEC, INC.
Robotic Systems

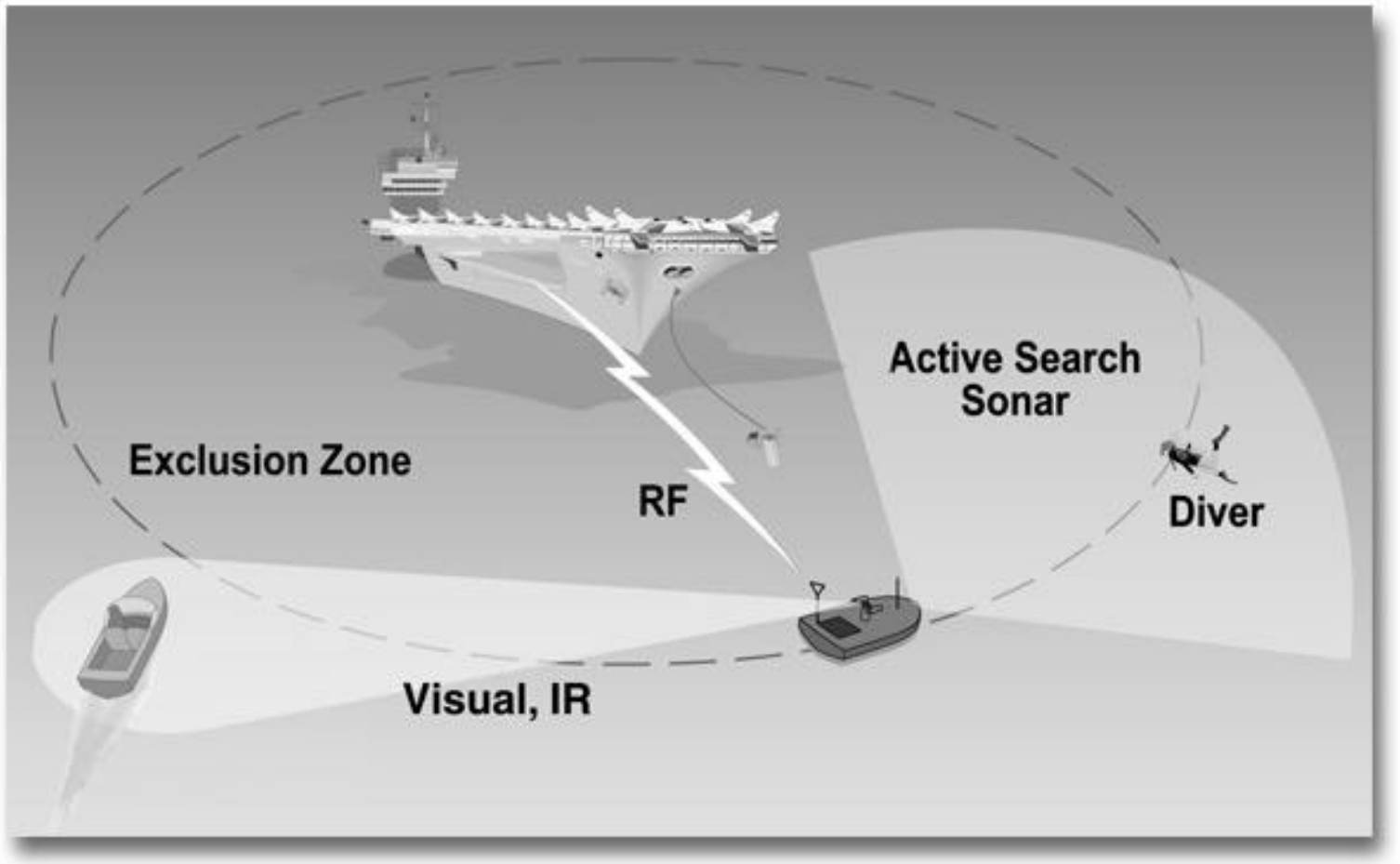
Accomplishments



- Demonstrated routine USV launch, control and recovery from a small ship
- Conducted side-scan surveys in 20 m water depths to 12 nm from ship
- Accomplished control of the USV and receipt of excellent video information to 10 nm from ship
- Detected an uncharted wreck in a mine danger area in North Arabian Gulf and also detected a mine-like object in a field of simulated mines in the Central Arabian Gulf (CAG)
- Demonstrated capability to tow TB-23 HF/MF modules with real-time data comms
- Detected and tracked a submarine in very shallow water (CAG)
- Demonstrated nighttime waterside security missions

NAVTEC, INC.
Robotic Systems

In-Port Protection



NAVTEC, INC.
Robotic Systems

Summary

- Personnel risk minimized
- Very shallow water operation
- Easy to launch, recover and operate from even small platforms
- Accommodates surface and subsurface search sensors
- Real-time sensor data feed
- Flexible payload capability
- High speed to mission area
- Endurance 24+ hr at low speeds
- Bridges gap between UAV's and UUV's
- Low-cost O&M
- Proven direct link to control platform
- Low observable design
- Flexible platform size configurations

NAVTEC, INC.
Robotic Systems

USV Concept of Operations for Expeditionary Warfare

NAVTEC, INC.
Robotic Systems

Recommendations

- Test Conops in Fleet Exercises/Experiments
  - CSS and SAIC USV's
- Experiment with Latest Sensor Technology
- Test Diesel and Diesel/Electric Engine
- Interface to GCCS-M MEDAL Segment

NAVTEC, INC.
Robotic Systems

Questions?

NAVTEC, INC.
Robotic Systems